UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF PREVENTION,
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

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TO: Pam Noyes, Chemical Review Manager
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SUBJECT: **Terbufos**:
Revised EFED RED chapter;
Revision of Fate and Transport and Water Resources

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DATE: Aug. 26, 1999

The purpose of this communication is to provide an updated copy of the EFED RED chapter for Terbufos to be placed in the Terbufos docket. (The updated RED chapter is attached.) The RED chapter has been significantly revised to address items submitted for the Terbufos docket and to make use of new information on the fate and transport properties of Terbufos and the sulfone and sulfoxide metabolites of Terbufos. Estimated concentrations in surface and ground water have been re-calculated for parent Terbufos and for the combined concentration of parent, sulfoxide, and sulfone, using the most recent model versions and using all available information on fate and transport properties.

Comments received by EFED and addressed in the chapter attached. The previous EFED RED chapter (11/4/98) was already revised to address comments received by EFED, with the following exceptions:

- Comments from Martha Philbeck submitted for the Terbufos docket
- Comments from American Cyanamid submitted 2/16/98

These comments have now been addressed in the RED chapter attached. In addition, each of these items is the subject of a separate communication. We responded to the comments from Ms. Philbeck on 8/5/99. The material submitted by Ms. Philbeck provides important perspectives on aquatic incidents caused by Terbufos. (See also our 4/11/99 communication on the significance of incidents in farm ponds.) On 8/20/99 we provided a separate communications addressing comments from Cyanamid. Each item has resulted in some revision of the RED chapter, as described in the separate communications.

Modification of the Environmental Fate Assessment. The Environmental fate assessment in the chapter attached notes that formaldehyde was found to be a degradation product in studies of hydrolysis, aqueous photolysis, and aerobic aquatic metabolism.

Modifications of the Ecological Risk Assessment and Risk Characterization. We have removed references to rainfall from the records of individual incidents in the Appendix to Section C of the chapter. It is understood that some rainfall is ordinarily required to move the pesticide to surface water. Inclusion of rainfall information for specific incidents would require further review and might require more rigorous documentation, for example daily records from rain gauges situated near to where the incidents occurred. The RED states that for many incidents the primary source of information is reports submitted by American Cyanamid.

Revision of surface water EECs. The surface water EECs reported in the attached RED chapter differ significantly from values EFED has reported previously. The differences are due the following modifications:

- The EECs for knifed-in applications to sugar beets take into account a recent reduction of about 50% in the maximum label rate.
- Whereas previous EECs represent parent Terbufos only, we have calculated EECs representing the decline of parent Terbufos and the formation and decline rates of Terbufos sulfoxide and sulfone in the field and off the field.
- EFED used the previously-submitted and reviewed aerobic soil metabolism study for PRZM and the new pond water degradation study for Terbufos for EXAMS.
- The newer PRZM model has more soil incorporation options than the older PRZM model. Use of these options resulted in significant changes in the EECs.

For all three labeled crops the model results suggest negligible exposure for application procedures other than T-band application. However, EFED is concerned that incorporation options in the most recent PRZM version may not adequately represent the availability of the chemical for runoff. The Agency has received reports of aquatic incidents for corn, for all

application procedures including in-furrow application. EFED believes that in-furrow application can be associated with significant runoff for any of the three labelled crops. While we believe that application procedures can have a large influence on runoff, we do not have field information confirming differences as dramatic as those suggested by the model results for Terbufos.